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Broad Spearpoints and the Transitional Period Cultures in Pennsylvania

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John Witthoft

Throughout the world, there is a certain basic patterning in flint tools, so that the arrowpoints of England, the Congo, and Japan include certain types that are almost indistinguishable from a few Pennsylvania forms. In fact, over much of the world there is so great a general similarity in flintwork of recent ages that the ordinary "arrowpoint" anywhere looks to the layman like any other point. Even experts can be readily mistaken about the continent from which a specimen came, and it is not always possible to identify the stray French or African point which has been mixed into a local American collection. On the other hand, each area in the world has certain distinctive shapes of arrowpoints, certain styles of flint clipping, and certain varieties of flints which serve to distinguish at least some of its relics. By and large, these important details are best known to local collectors and have generally not been adequately described in the literature of American archeology. In Pennsylvania several series of quite distinctive point types are recognized by some of the local students, and are of extreme importance because of their restricted area and time of manufacture, but are very poorly known outside of a small circle of collectors. This article is the first in a series in which I shall attempt to characterize some of the most distinctive and important point types of this area.

Certain very broad, thin well-flaked, and often asymmetrical spearpoints of eastern Pennsylvania are among the most cherished flints of local collectors, and are quite different from any points of other areas with which I am familiar. In older collector's lore, these points were generally identified as knives, because of their breadth, asymmetry, and broad tips. Since they are almost the only points found on some sites, and since they so rarely show worn and used edges, at least the majority of them must have been projectile points rather than knives. Some collectors call them "Berks County Points" because of the frequence of very pretty specimens in that area, while others call them "butterflies" because of the broad winged outline of many specimens. William A. Ritchie, in conversation, has referred to them as "heart-shaped points." In the following account, I am attempting to describe three major forms, the narrower heart-shaped type of the Susquehanna Valley and the two broader butterfly types of eastern Pennsylvania. Two other related types are also discussed. The first form is better known from my own site survey work, and I am sure it can certainly be equated with the Transitional Period, an interval between the last pre-pottery cultures and the earliest ceramic period. The cultures of this Transitional Period are characterized by carved soapstone vessels, and, interpolating from data from other states, must have flourished about three thousand years ago.

The broader points of the more easterly areas are so like the Susquehanna Valley type that they must be of practically the same age, and the little data we have on the sites where they are found bear out this equation.

The spearpoint forms which are herewith described are very distinct and well-defined natural classes, despite the variability within each class. I should like to emphasize, however, that these three types are actually intergrades, and do merge into one another. I have included in the plates the best examples of such intermediary forms which I could find; actually, they are rare, and my illustrations include an unduly large proportion of them. I also suspect that some merging can be shown between these broad spear types and the narrow types which I describe last, although I am unable to lay out a series of specimens which shows this. On the other hand, I am not able to show connecting links between these broad spears and other projectile point types of eastern Pennsylvania. Certain relationships which I suspect existed are discussed with the type descriptions, but even working with the largest sample of eastern Pennsylvania material in existence, I am not able to form synoptic series showing such transitions. The broad spear types here described are remarkable local forms, quite distinct from any other types with which I am familiar. They are not mere aberrant forms, but were the usual pattern of projectile point used by a few groups of people for a short interval in time, perhaps three or four centuries.

My basic knowledge of these spearpoints is derived from site survey work in the Susquehanna, Delaware, and Hudson watersheds, where these broad points were conspicuous both as stereotypes seen in every collection and as a part of a peculiar series of sites, characterized by very large, thin, flat chips and by a recurrent complex of basic traits, such as peculiar flinty materials, soapstone, and unusual types of net-sinkers. There is remarkably little about these spearpoints in the literature, considering how striking some of them are and how well-known they are among local collectors. My basic interpretations in this paper are based largely upon my own field observations, but my descriptions and characterizations are based upon a much larger series of specimens than I or any other single person has ever collected. In trying to understand these forms, I have segregated all examples in the Pennsylvania State Museum Collections, and have studied large series in many private collections. The total series of the three types with which I have worked represents somewhat over ten thousand specimens, and I have at this time had several thousand of these laid out at once in synoptic series by groups. In my illustrations, drawn from these series, I have tried to emphasize neither the ideal forms nor the extreme and peculiar examples. I have tried to include some of the least distinctive examples which pertain to these types, and attempt to show the range in form, finish, and other details. The largest specimens seen are not illustrated, because they take too much space. The prettiest and best executed examples are also generally omitted, because some less attractive specimens usually showed some detail that I wanted to illustrate more. Neither do the plates show any unique forms; much more asymmetrical and much broader large forms are known, but each one is a lone example in its particular shape and proportion. I should also stress that many of the larger, broader, and more grotesque variants of these points are best known as fragments, and are rarely found whole or as basal halves. Small pieces of some of the more fanciful shapes among these spears can be very puzzling relics indeed, unless one has seen intact examples and recognizes their shape details. I have not hesitated to illustrate broken specimens, but have tried to avoid broken ones that look intact; where there is any question of this, I have inked in suggested outlines of the missing portions.

In working with the total series, there were certain details which were conspicuous. Many collectors, including my predecessor, the late Henry K. Deisher, considered these points to have been knives, because they were often so broad, large, blunt, and asymmetrical, and thus seemed poorly adapted to penetrating the body of a game animal. This can hardly be, for the total series showed no single good example of wear on the edges or near the tip, such as occurs on at least a few out of a series of knives. The dulling of the edges of the tang by grinding, to prevent cutting the lashings, was known to be characteristic of these broad points. With the exception of six specimens, every example in our series showed this basal smoothing well-developed. The few examples which lacked this dulling appear, in other respects, to have not been finished, and three of them have not had the tips retouched to the final point. Two of these nearly finished specimens are illustrated (Pl. 1, No. 27; Pl. 2, No. 68). Also noteworthy was the number of rechipped points and of tools made from broken points. Certain examples have been segregated in Plate 3, but many of the stumpier forms other than these have probably had their points rechipped at least once. Most of the other tools, such as the scrapers made from these broken spears and the drills, made with the same base, both from blanks and from broken points, show strong evidence of use and are badly worn; this is another argument against the unworn spears having been used as knives. Most of the scrapers are not beveled, but would be called "blunts" or "stunning arrows" by most collectors; nevertheless, all of the illustrated scrapers are badly worn at the blunted end, and were most certainly not used as arrowpoints. One curious sidelight should be mentioned: all of the older collections examined included considerable numbers of these broad points that have been rechipped in modern times; a whole specimen flaked from a broken one. These broad spears, especially the jasper ones, seem especially susceptible to this type of fraud, and some of the strangest shapes, on close examination, turned out to have been monkeyed with. Needless to say, anyone working with flint tools of this sort, and drawing on older collections, must be especially careful to screen out rechipped points. With these broad spears, one must further distinguish between those rechipped by Indians and those improved by the collector.

It will be noted, from my text and description, that I am attempting to characterize lithic industries and archeological complexes from surface collections alone, without recourse to excavation data. This is not quite true, for our data include one stratigraphic test excavation, but my basic procedure here does not depend upon that. I believe my procedure and conclusions here are valid nevertheless, for our collections include material from at least four nearly pure sites, and represent recurrent complexes from at least a hundred sites. My thesis depends ultimately upon a certain consistency in surface hunting; wherever chips of a certain form and stone are found, one can predict the finding of broad spears of one form or another, of soapstone, of drills of a certain form, and, if near a river, of certain other artifact types. On the other hand, in the area with which I am dealing, these items are rarely found apart, and then not in any quantity. Rarely one finds a site where only the few tool types of this recurrent complex can be found, without other flint materials or other tool types. To me, this is the strongest kind of evidence for the existence of a separate and distinct culture type, and is much less ambiguous than most excavation data. With the descriptions of spearpoint types which follow, I include subsidiary information and suggestions on the culture complexes to which these spears pertain. Since several classes of these points seem well-defined, and since type names and descriptions have come to be so generally used for projectile points, I am using a more or less standard outline form for the following discussion.

SUSQUEHANNA BROAD SPEARPOINT

(Fig. 1, a, b; Pl. 1, Nos. 1-27, Pl. 2, Nos. 1-8)

General Form: Broad, boldly flaked spearpoints of roughly semi-lozenge to rough corner-notched shape, with certain characteristic contour details. Generally half as broad as long, or less. Rarely quite narrow.

Tip: Acutely to obtusely pointed, thin, most often with convex edges. Tip not extremely acute.

Blade: Triangular, usually with some portion of the edges convex, especially near tip. Edge often somewhat concave near base. Frequently not symmetrical. In cross-section, the faces of the blade are evenly rounded rather than keeled or flat. Retouching of the edge to final contour was usually from one face of the blade.

Ears: Not barbed, but jutting in a characteristic fashion. The ears are usually angular, forming an obtuse angle, and are sometimes somewhat rounded. In either case, they are always thin and sharp, carefully retouched to thin, straight edges. Frequently the blade edge in front of the ear is slightly concave. The ears seem to have been intended as a cutting corner, perhaps adapted to enlarging a wound with withdrawal of the spear. Main contours of the ear and tang were formed by boldly striking off only two or three flakes from each corner of the blank, and the final retouch to these parts is generally from one face of an edge only. After one edge was retouched from one face of the point, the point was turned over and the other edge retouched from one face, with a minimum of chipping from the other face. Ears are often quite asymmetrical.

Tang: Always constricted and almost always with a concave base; base is rarely straight or extremely concave. Base of the tang narrower than the ears, with tang corners generally acute and prominent. All edges of the tang are always ground smooth, including the basal corners of the tang. This grinding is a facet across the edge rather than a rounding off of the edge. Edge grinding ends at the beginning of the basal edges of the ear, generally at a break in contour of the outline. The change in outline at this point is partly a result of the grinding, and partly a result of the retouch-shaping which preceded the grinding.

Size: Most specimens are between an inch and a half and four inches long; rare examples are as short as an inch and as long as eight inches.

Cache blades: Finished spearpoints of this type show two chipping stages; first, the flat, broad flaking of the blank, and, second, the spalling out of the corners and the retouching which finished the point. In making a point from a blank, the blade was only slightly modified by a fine retouch, and the basal portion was more extensively rechipped. An unfinished specimen, intermediary between cache blade and finished point, is illustrated. (Pl. 1, No. 27.)

I have seen no cache of blanks for this type of point, but the broken blanks are very numerous on sites with the broad points. They are almost always pentagonal, although rarely the base is rounded. They are very coarsely flaked, with thin, irregular edges, and were generally chipped from large spalls. Most of the spalls from which the cache blades were made were natural frost-broken sheets of rock rather than pieces knocked off blocks. Frequently the blanks preserve a large part of one flat weathered surface of such a natural spall. (See *Source of material* below for origin of the spalls from which the blanks were made.) These blanks are almost always found broken. Occasionally one is found which has been used as a knife, and these show wear of the broad base rather than of the tip; the basal edges were used for cutting.

Lithic material: Practically all projectile points of this type found in Pennsylvania and New York are made of the purplish rhyolite which originated in Franklin and Adams Counties, Pennsylvania, in the vicinity of Gettysburg. Out of every thousand points, perhaps ten may be made of other materials, which include Pennsylvania Jasper, black flint, argillite from the South Mountain of Lebanon County, Pennsylvania, hard black shale, Onondaga Chert, and Ohio Chalcedony. I have handled perhaps thirty specimens of jasper, and not more than five apiece of the other materials.

Wherever the complex which includes these points is found, even on the upper Susquehanna in New York, they rarely used any other stone but this distinctive rhyolite, and all the points and chips of this industry are of this material. There are sites, more than two hundred miles from any sources for the stone, where people of the Transitional Period chipped no other material, where all their tools were of this imported stone.

The material itself is an aporhyolite of probable pre-Cambrian age, found as a single formation in a quite restricted area west of the Susquehanna in southern Pennsylvania.[1] The deposits are entirely in the rugged South Mountain area, and nowhere come near the Susquehanna River. They are of very local distribution and have no great extension outside of this area. They represent ancient lavas which were cooled at some depth in the earth's crust rather than on the surface (rhyolites), and which were alkaline, with a large proportion of aluminum salts. These rhyolites, metamorphosed and modified by later heat and pressure, have been recrystallized from a glassy lava resulting in a somewhat distinct rock, aporhyolite. Two phases of the stone occur in these deposits, one reddish and of rougher texture, the other purplish and often fine textured. The reddish phase was rarely used for tools by Indians.

The stone is made up of microscopic crystals of orthoclase feldspar with a small amount of scattered minute quartz crystals, cemented by very little glass, with many tiny but visible crystals of quartz and orthoclase feldspar. Some specimens are a good micro-crystalline material, almost shale-like in appearance, while much of it is quite granular with abundant quartz and orthoclase crystals. At many outcrops the stone is too coarse and granular to be a good material for tools. Most specimens of the rock contain abundant thin lenses and spherulites of quartz crystal clusters, and sometimes include large prismatic crystals, up to a quarter inch in length, of orthoclase.

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1. William Henry Holmes, Stone Implements of the Potomac-Chesapeake Tidewater Province, **15th Ann. Rept. Bur. Amer. Ethnol.,** Washington, 1897, pp. 1-152. Pp. 73-77.
Henry K. Deisher, South Mountain Jasper Quarries, **Penna. Arch.,** Vol. 3, No. 3, pp. 6-7, 18-19. Pp. 18-19.
George W. Stone and F. Bascom, Fairfield, Gettysburg Folio, No. 225, **Geol. Atlas, U. S.** Washington, 1929. Pp. 4-5 include a geological discussion and petrographic description of these rhyolites.

It is a stone well adapted to percussion chipping; the tiny size of the crystals of which it is made and the homogeneous texture permit good conchoidal fracture. I have not seen an identical aporhyolite from any other area, and am certain there is no other source for this material in the eastern United States.

The Indian source of supply: All of the rhyolite used for this projectile point type came from a small area in the Gettysburg region. Here the rhyolite is a major contour-determinant in the topography, forming massive ridges and conspicuous spurs against the mountain. On elevations, the hard rhyolite was denuded of soil by deep frost action during the glacial periods, and was deeply frost-riven, so that today the frost-split rock forms large boulder fields and talus slopes on high ground. At any of these exposures Indians could find frost-broken flat pieces of about the right size and of good enough quality to make a tool. Almost every boulder-strewn slope which I have visited in the area produces a few percussion-chips and Indian-broken blocks. At Fairfield Station, Franklin County, rock spurs of rhyolite, deeply frost-fractured and covered with talus slopes of small blocks and spalls, lie against the south foot of the mountain. Here the Indians dug into the slopes of these rock spurs, to bring down slides and get access to less weathered pieces than were exposed on the surface. The traces here are not actually quarries, but rather holes scooped into a steep hillside to cause rockslides. Near Caledonia, Franklin County, they dug small pits into the flat tops of the ridges to get fresh stone, and many of these small craters are thinly scattered through the woods. At one point north of Caledonia State Park the rhyolite is of exceptionally fine grain and flinty texture, and here is the one concentrated area of quarrying in the rhyolite which I know of. The surface of the craters and the areas between them are mantled with chips and spalls; rejects, and river-pebble hammerstones (of the unpitted variety) can be found by raking in the leaves, duff, and chippage. The preponderance of the rejectage from this and from all the other workshops is of the Archaic Epoch, earlier than the Transitional Period. However conspicuous the Rhyolite Industry of the Transitional Period is in the Susquehanna Valley, it is only one short chapter in the history of rhyolite usage. It is the most widely traveled of the rhyolite industries, but it is far from the most important one in Franklin and Adams Counties. In the Antietam drainage system and in the Susquehanna water systems of the Conodaguinit, Conocojig, and Conewago Creeks, rhyolite is the stone of the countryside, and most artifacts were made of it. Even in the Late Woodland Period, small triangular arrowpoints were frequently rechipped from Archaic rhyolite points which the Indians surface-hunted. In this region, several different Archaic industries with diamond-shaped, stemmed, and rough corner-notched points in rhyolite of at least eight distinct types are found everywhere, and Susquehanna Broad Spearpoints are actually rare, even though the lithic material originated here. Along Sherman's Creek, the important Susquehanna tributary leading most directly to the rhyolite deposits, I have rarely seen a spearpoint of this type. No good site of the Transitional Period has been found anywhere in the region where the rhyolite originated. A parallel situation will be commented on later in this paper where I discuss the soapstone sources utilized by the same people. The broad spearpoints were made by people who lived along the main rivers and only visited these back-country areas for lithic materials.

Other chipped stone tools of the Rhyolite Industry: Since so many other and equally important industries used the same lithic material, I refer to the chipped stone industry which includes the broad spears as the Susquehanna Rhyolite Industry. This industry represents one set of manufactures of people who were responsible for the Susquehanna Soapstone Culture of the Transitional Period; the culture includes all of the cultural material made and used by the people who made this type of spearpoint; the soapstone vessels and steatite objects of the same people are their soapstone industry. Their bone industry is unknown. In this type of classification, a culture is made up of all the objects made and used in a single community at one time, and consists of several industries. A culture may include more than one chipped stone industry; the people may have had more than one distinct type of flint industry, even as we have distinct industries in iron, as forged and cast. A culture also includes, usually, a bone industry, a mortuary complex, a settlement pattern, certain economic traces, and other details, the total culture being all that we can discover about the products and way of life of a people. In most cases the picture is very incomplete, as in the present instance. An archeological culture consists of all the statements we can make about the material objects and way of life of an extinct community, whether the list is scant or well-rounded. I am making this article the vehicle for as full a statement as I can make about the life of an extinct group of Pennsylvania Indians; it is actually a preliminary attempt to define their culture.

Drills: Next to the broad spears, the most abundant chipped stone tools of the Susquehanna Rhyolite Industry are drills. Probably more than half of the drills found in the Susquehanna Valley can be ascribed to this industry, for I know of no other Pennsylvania complex in which drills are so numerous. These drills have their tangs and shoulders shaped exactly like those of the broad spears, and the tang edges are always ground smooth. (Pl. 3, Nos. 44-49.) They have either been shaped from damaged spearpoints or made to the same pattern from identical blanks. The tips and sides of these drills are almost always well-worn, and sometimes the very end of one has been re-shaped by grinding facets on it rather than by chipping. The faces of the drills often show some wear and polish from handling. Sometimes one is found with soapstone dust still gummed in crevices of the rhyolite; these were obviously used for drilling repair-holes in cracked soapstone vessels and for perforating soapstone beads or gorgets. The abundance of drills and their severe wear indicate that they were probably used more often for drilling wood than soapstone, however, and that they were important tools in this culture. Bar-drills, without a tang or base of any sort, are also frequently found in the Susquehanna Valley and were made of rhyolite, but we are not certain that any of this simpler form were a part of this industry. The drills abundantly associated with the broad rhyolite spears have the same tang-shape, and seem to have been made from damaged spearpoints. All of the other chipped stone tools of the same industry seem likewise to have been rechipped from broken spears, and more conventional scrapers and knives are unknown in this industry.

Scrapers: Ordinary forms of beveled scrapers, made from a spall or thick chip flaked to plano-convex form, are unknown in this industry, and scrapers of any sort are extremely rare. The only forms known have tangs and bases like the spearpoints, with their tang edges ground smooth. Most often the flaking pattern on these shows several stages of chipping, and scrapers have obviously been made from a broken spearpoint. (Pl. 3, Nos. 27, 28.) The tip has been chipped to a rounded outline. It is not beveled, but chipped from both faces of the point, and the end is frequently thick and splintered. The average collector would call these tools "blunts" or "stunning arrows," but they were never used as arrowpoints, because the tips are almost always worn and rounded from use as scrapers. In the Susquehanna Soapstone Complex, scrapers are actually rare, and do not appear to have been an important tool. Every example I have handled has the non-beveled edge, chipped from both faces, and almost every one is badly worn at this edge.

"Drill-tipped" tools: Rechipped spears with rounded tips which have had a small nipple or tit chipped at the end are about as frequent (or as rare) as scrapers, and are generally called "drill-tipped arrowpoints" by local collectors. (Pl. 3, Nos. 35, 39, 41.) About half of these show wear at this projection, indicating that they were not arrowpoints. The wear is not on the edges of the point, but at the tip and on the faces near the tip; therefore they were not used for drilling or perforating, but as gouging or engraving tools. As with the scrapers, they all seem to have been rechipped from broken spearpoints. Some of them may have been chipped from broken drills. (Pl. 3, No. 35.)

Rechipped and worn spearpoints: Quite frequently a spear-tip which had been damaged was resharpened by chipping the end to a new point (Pl. 1, Nos. 14, 16, 19), but this salvage of broken points is by no means as frequent as with the other types of broad spears described later. Rarely a point which was broken had the broken edges chipped to a sharp edge but not reshaped; this may have been an emergency procedure, or these may represent another form of tool. (Pl. 3, No. 25.) Very short stumpy rechipped points of the Susquehanna type are very rare, as compared with other types described later. Very rarely a spearpoint of the Susquehanna type shows a wear-facet at one edge near the tip, where the edge was drawn across some hard surface and a straight abraded facet produced. This is quite different from the rounded wear and polish on scraper and knife edges, and is the same type of wear which is found rarely on broad jasper spearpoints. Very rarely a spearpoint of the Susquehanna type has the tip pointed by grinding six or eight facets at the point, probably to repoint a damaged tip. This rare type of tip grinding is also found on other types of spearpoints, however, and its significance is not understood.

Flakes and chips: In the field, the presence of this industry on a site is indicated best and most quickly by the chippage. Flakes are most distinctive, and are large, broad, very thin, sharp-edged, and of purplish rhyolite. In outline most of them are oval or subovate. In large samples which I have collected, I have never found one of these keen-edged chips which had been used as a knife or retouched to a scraper or to any other tool form; this industry does not include utilized flakes of any type, or any tools based on flakes. In the same vein, we notice the abundance of spearpoints and drills, the rarity of scrapers and of graving tips, and the complete absence of any other chipped tool types.

The Susquehanna Soapstone Culture: The Susquehanna Broad Spears characterize an important series of sites, most of them small, but very numerous, from Chesapeake Bay to the headwaters of the West Branch Valley and of the Juniata, and to the headwaters of the North Branch in New York. Actually, the sites are almost always on the banks of major streams, and these broad spears and the associated artifacts are rarely found back-country or on smaller streams. Practically every island in the river includes sites of this complex, and almost every high floodplain on the main river or its large tributaries has sites of this type. Wherever the complex is found, the chipped stone is always rhyolite, even in New York State, where there was apparently an extension of this culture into the Finger Lakes Region. Several important sites of the complex will be mentioned separately.

With the rhyolite tools, the most abundant objects on these sites are netsinkers and soapstone sherds. The netsinkers are not like those of the Late Woodland Period (almost round, flat pebbles, chipped at the sides), but are long oval pebbles, thinner than those used in late times, frequently thinned more by splitting, and are notched at the ends. Sometimes they have four notches instead of two. The notches are narrow and sharply chipped, rather than battered out; this is partly due to the thinness of the sinker. The soapstone sherds are fragments of soapstone kettles, which were oval to rectangular, flat-bottomed, straight to sloping-sided vessels carved from soapstone blocks. These sherds are frequently drilled, where cracks had been lashed tight to prevent the split from spreading. Very often these sherds have sawed edges, where fragments of the broken kettles were cut up to make other objects out of the pieces. The objects most frequently made from them are beads, thick, doughnut-like perforated objects, found very frequently on these sites. These beads often have notches sawed across the edges, like the sawed notches which are frequent on the lips and handles of the soapstone vessels. Much less frequent are heavy gorgets cut from soapstone sherds, rectangular with slightly rounded corners, with two, four, or six holes drilled from both sides, and ladles or spoons cut from pieces of vessels.

Other items which one can always expect to find on these sites are river pebble hammerstones without pits, pitted hammerstones, flat river stones used as anvils, and heavy adze blades, long, of oval cross-section. Objects which are rare, but which have been found in the Susquehanna Valley only on sites of this culture, are boulders with large pecked notches ("canoe anchors"), cupstones (boulders with multiple pits), and notched gorgets of shale. These are heavy rectangular tablets, with two sets of V-shaped notches ground into the side edges. Seldon Island Steatite Tempered Pottery is also believed to be a part of this complex; although several very large sites of this culture have failed to produce a sherd of it, it has been found on many other sites of this type, and I am sure it was made by the same people who made these soapstone vessels.[2] Other artifact types and pottery forms seem to be completely absent.

Sites: Sites of this complex are almost always at the river bank, on high parts of the floodplain. At the mouth of the Juniata, for example, a site of this complex extends as a narrow belt for several miles along the south bank of the Juniata and adjacent shore of the Susquehanna. The occupation of this period forms a continuous band here, with smaller sites of other periods settled along it. The Montoursville Flats of the West Branch Valley are another location where overlapping river-edge camps of this complex form a long site extending for several miles along the "highbanks." Most of the sites are smaller and more concentrate, and are generally confused by the presence of older and newer cultures on the same site. Even on the Upper Susquehanna, large sites of this sort with abundant rhyolite and soapstone are conspicuous, as the site at Milan Station, Bradford County. One Bradford County site, B^{r}58, the South Towanda Fairgrounds Site, has the Susquehanna Soapstone Culture buried on an old land surface three feet below the present ground surface.[3] One stratigraphic test excavation at this site produced broad spears, drills, rhyolite chips, soapstone sherds, and netsinkers from this old surface, and presents strong evidence that my segregation of this complex as a distinct culture is correct. In all the cases with which I am familiar, sites of this culture are on the lowlands and generally at the river bank, and are not on hillocks back from the river or on small streams. This culture seems to be the product of a river-roving people, who lived upon fish, wild fowl, and large game, and who depended upon the river valley for these resources. There are never any deposits or dumps of mussel-shell associated with this culture, and it would appear that they did not ordinarily eat the river shellfish. Migrant river life with emphasis upon canoes would explain the economic pattern, the distribution of sites, and the curious distribution of materials. The rhyolite and soapstone were carried into all sections because canoe-life made transportation of desired non-local materials easy.

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[2] Carl Manson, Marcey Creek Site: An Early Manifestation in the Potomac Valley, **Amer. Antiq.,** Vol. 13, No. 3, 1948, pp. 223-227.
Richard G. Slattery, A Prehistoric Indian Site on Seldon Island, Montgomery County, Maryland, **Journal of the Wash. Acad. Sci.,** Vol. 36, 1946, pp. 262-6. (This site is 30 miles northwest of Marcey Creek.)
I probably should point out here that Susquehanna Broad Spearpoints of rhyolite are not reported from these two sites, nor have I seen spearpoints of this type from the Potomac Valley. The Aporhyolite from Pennsylvania sources was a dominant material in certain poorly known Archaic sites of the Potomac Valley, and this rhyolite was used in tremendous quantities in that area. The spearpoints which accompany the soapstone sherds of the Potomac have not been identified or characterized, so it is difficult to say whether the Transitional cultures of the Potomac are closely related to the Susquehanna Soapstone Culture.

Sources of the soapstone: The most easily accessible and the likeliest source of the soapstone used by these people was in the serpentine outcrops near Christiana, Lancaster County, where extensive Indian quarrying of the soapstone is still evident.[4] A large number of quarry pits were still open here as late as 1880, but all have now been filled in and leveled by the farmers. For several miles around the outcrops, debris from the soapstone industry is scattered on camps where soapstone vessels were made. This debris includes rejected and broken roughed-out vessels, sherds from nearly finished vessels, soapstone blocks, sawed pieces of soapstone, occasional drilled soapstone blocks, and whole and broken quarry picks. These sites do not have any quantity of flint or rhyolite chips, and other tools of any sort, including spearpoints, are extremely rare on these camps. The people who quarried the soapstone did not live here, but only stayed long enough to dig out and shape up the soapstone, and left almost no tools except the picks behind them. Judging by the sherds from vessels broken in process, the pots were finished at camps near the outcrop, and rarely carried away as blanks. At these camps, many soil areas are filled with soapstone dust and chips, the scrapings from shaping the vessels, and the picks are very frequently coated and smeared with powdered soapstone.

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[3] Discovered by Leroy Vanderpoel, of Athens, Pennsylvania. Collections from this site are in the possession of Mr. Vanderpoel and in the Pennsylvania State Museum collections. Br58 is on the riverbank behind the old Fairgrounds site, on the Jim Murduth Farm at East Towanda. Study of the eroding riverbank, over a period of five years, indicates that the rhyolite industry is here found only in a single thin dark stratum about three feet below the present ground surface. Sterile subsoil above this stratum produces Middle Woodland objects, and Late Woodland materials are found in the plowed soil and pits dug from that level. A stratigraphic test here by Vanderpoel produced no artifact material except in the plowed soil and the buried dark stratum; the latter contained 8 soapstone sherds, 9 Susquehanna Broad Spears of rhyolite, 2 bases of related rhyolite drills, 2 cache blades of rhyolite, 6 tips of rhyolite spears, and a quantity of rhyolite chips, in an area about ten feet square.

[4] Archibald Crozier, The Steatite Quarry near Christiana, Lancaster County, Pennsylvania, **Bulletin, Arch. Soc. of Delaware,** Vol. 3, No. 2, 1939, pp. 13-15. Reprinted in **Penna. Arch.,** Vol. 10, 1940, pp. 18-20.

The quarry picks: The picks, which I intend to describe and illustrate more fully elsewhere, are rarely found more than a few miles away from these quarries. Most of them are narrow, long, thick, carefully chipped celt-like tools with a ground and polished bit. The vast majority were broken in use. Very few are crude pointed tools chipped from a large spall, and many are very carefully made with sharp, highly polished bits. The bits are narrow compared to the width of the body of the tool; they taper to the working edge. A very few are chipped from stream pebbles, but most are of non-local stone, carried from the Susquehanna and Delaware Valleys, of the non-flint coarse materials from which so many spearpoints were made. They are mainly of rhyolite, Bucks County Argillite, South Mountain Argillite, and similar materials brought from distant outcrops. Since they were carefully made and represented much labor, they were rarely expended and discarded except at the quarries, even though they were made elsewhere and brought here. The rhyolite picks doubtless represent the work of the Susquehanna Soapstone culture, and the other types represent peoples from other areas. As may be inferred from my description, I believe that the total of the soapstone working at this location was done during the Transitional Period, at the time of the broad spears, and that none of it is earlier or later. I likewise believe that all of our soapstone vessels pertain to a very limited period in our archeological history, and that they were not used by peoples before or after the Transitional Period; they represent the first form of cooking vessel, slightly earlier than the first pottery, and were soon supplanted by pottery vessels. Soapstone vessels are of considerable antiquity, not by any means the product of recent Indians, and they are the starting point in the history of hollow cooking-ware in the Eastern Woodlands. Quarry picks are a very important part of soapstone industries, and represent an equally peculiar and restricted type of tool.

Quarry picks are among the rarest of tools in Susquehanna Valley sites of the Susquehanna Soapstone Culture. I have never seen any of them north of Lancaster County, and have rarely found them on the riverside sites of this culture in Lancaster County. I believe the reason for this is that they were used only in making vessels at the quarries, and were not expended elsewhere. John Stone, of Holtwood, Lancaster County, found a cache of seven quarry picks on Bare Island, Lancaster County, and has found more scattered picks in this region than have turned up in all the rest of the Susquehanna Valley proper. The soapstone vessels, the picks, and the broad spears were the tools of riverine people who probably wandered throughout the Susquehanna Valley in canoes, seasonally returning to the lower valley for lithic materials, visiting the rhyolite deposits and making up a supply of cache blades and quarry picks, traveling to Christiana for soapstone, and returning to their livelihood on the main river with a stock of cooking vessels and rhyolite tool blanks.

Origin and Relationships of the Susquehanna Broad Spear: The Susquehanna Soapstone Culture represents a very distinct and marked change in every detail of material culture and way of life from earlier times in the Susquehanna Valley. During the Late Archaic Period small bands of hunters bivouacked on high ground throughout the area, leaving behind a great variety of spearpoint forms, axes, bannerstones, and scrapers. They rarely camped on the river, and they used no cooking vessels, apparently roasting their meat. With the Transitional Period, river people who boiled their food, made a single type of spearpoint, used almost none of the tools popular in earlier times, and ignored most of the flints and other materials used earlier, lived almost entirely along the river banks and left little evidence of their way of life elsewhere. We can hardly say where they came from or what their relationship was to the peoples who preceded them, but we are quite sure that they carried a culture which arose and flowered in the immediate area and was not the result of a whole migration of new peoples who completely displaced earlier hunters.

The soapstone vessels are of a stereotyped pattern found almost throughout North America. They apparently represent a widely diffused type of cooking ware and culinary habit which spread through the continent well before the beginnings of farming. We do not know whether the soapstone pot tradition began in the New World or was introduced from Siberia, but very likely it began somewhere in North America and quickly became a popular style wherever soapstone was readily available, at a time when peoples of the Mississippi had already been long adapted to life on the rivers, and peoples elsewhere were shifting to fresh-water food resources to supplement a diminishing game supply.

The broad spearpoints are not related to any Laurentian forms, and cannot be descended from any types of the Brewerton Culture, which dominated the upper Susquehanna in late Archaic times. Their closest relative seems to be certain heavy, rough, crudely corner-notched rhyolite points found among other Archaic types in the area included between the Lower Susquehanna and the Juniata Rivers. The Archaic of this area, like that of the Chesapeake Bay region and the Potomac, is extremely important and very poorly known. These two areas, the Chesapeake with waterside Archaic communities and the southwestern Susquehanna drainage with roving back-country hunters, probably contributed the people and the cultural traditions which swept throughout the Susquehanna drainage during the Transitional Period. Significantly, the people of the Susquehanna Soapstone Culture always returned to this area for their lithic materials. The soapstone-tempered pottery which they apparently made also has its homeland in the southern region, on the Chesapeake, the Potomac, the lower Delaware, and the Rappahannock. The soapstone industry, and especially the quarry picks, seem precisely like those of the Potomac Valley, and our culture has its closest relatives there, even though the spearpoint forms may be different and represent local traditions. With better knowledge of the Potomac Valley Transitional Period, closer relationships may become apparent. Delaware Bay Complexes of the same period seem to represent another distinct but closely related local pattern, not yet well-defined. Upper Ohio Complexes of the same time period are at present not unscrambled.

Certain other very distinct and well-defined tool types of other areas of eastern Pennsylvania most certainly originated from the Susquehanna Broad Spear, and the connecting links are quite obvious. Later portions of this paper are concerned with these related tool types and cultures.

The Susquehanna Soapstone Culture, with its Susquehanna Broad Spearpoints, is the source for a great many of the most distinctive features of other cultures of the Transitional Period to the east and north, in central New York, the western and northern Delaware drainage systems, and the Hudson-Mohawk system. Equivalent cultures in these regions are less well-known than in the Susquehanna Valley, and in most cases they have not yet been segregated into distinct complexes.[5] The Susquehanna Broad Spear type appears to be the ancestor of the Perkiomen Broad Spear and the Lehigh Broad Spear types, as discussed later in this paper, as well as of slightly different broad types of central New York and of the Hudson-Mohawk which I do not attempt to define here. These derived types are, I believe, both later than and contemporary with the Susquehanna Broad Spear type; at any rate, they are overlapping ages and there do not seem to be any very significant time differences among them. Distributions are more geographic than temporal. In the Susquehanna Valley, this complex definitely does not include Laurentian survivals; in New York, related complexes of this period may do so. In all of these sub-areas, the Transitional Period Cultures do seem to represent the coming of a new complex of cultural traditions as a unit from the lower Susquehanna Valley, and a discontinuity with earlier cultures and even, perhaps, populations. The new way of life and tool complex did not migrate in from another major area, but spread from one corner of this major area, the western slope of the lower Susquehanna. During the Transitional Period, we can see a number of cultural sub-areas which make up one big culture area, included within the drainage basins of the Potomac, the Susquehanna, and the Hudson-Mohawk. The Susquehanna Soapstone Culture is the first of this set of brethren complexes to be segregated and defined.

PERKIOMEN BROAD SPEARPOINT

(Fig. 1, c, d; Pl. 1, Nos. 28-47, Pl. 2, Nos. 9-65, Pl. 3, Nos. 16-24.)

General Form: Very broad, boldly flaked spearpoints of semi-lozenge shape, with certain characteristic contour details often exaggerated. Generally half as broad as long, or more. Rarely narrow, often very asymmetrical.

Tip: Obtusely pointed, thin, generally with straight edges. Tips show flat broad flaking and are never very acute, always thin, with somewhat convex edges.

Blade: Generally approximates an equilateral triangle, with convex edges near tip, and often slight convexity or concavity elsewhere. Blade edges are frequently asymmetrical, and the blade is often somewhat out of center in relation to the tang. Blades are thin, with rarely any medial ridge; where one occurs on one face, the other face is usually flat.

Ears: Frequently barbed, sometimes at both ears but more often only at one corner. The ears may form either obtuse or acute angles, but even strongly barbed specimens rarely have very acute ears. Edges in the ear area are always thin and sharp, and were carefully retouched to straight, even edges. Often the blade edge ahead of the ear is somewhat concave or convex. Chipping details of the ears and of the blade are like those of the Susquehanna Broad Spearpoint, but the breaks in contour of the edge are frequently very pronounced in the Perkiomen type, and the barbs and grotesquely turned corners are exaggerations of these shape-details. The two edges of a specimen rarely show strong symmetry.

Tang: Always constricted and almost invariably with a convex base; the base is sometimes straight but is almost never concave. The tang is unusually small compared with the blade, and frequently is tiny in proportion to the rest of the spear. The tang corners are rounded, not prominent, and never suggest barbs. All edges of the tang are always ground smooth, including the basal corners of the tang. This edge grinding extends out onto the ears only a short distance, generally to a conspicuous break in outline.

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[5] William A. Ritchie, **The Pre-Iroquoian Occupations of New York State**, Rochester Museum Memoir 1, 1944, pp. 108-12.

Size: Rarely less than two inches long and rarely more than four. Specimens up to nine inches long are sometimes found, and I have seen some examples four inches broad and six long. Fragments of such very broad, long examples are frequently found, however, and they must have been commoner than the whole specimens would suggest. Small pieces broken out of the bases of these big specimens are sometimes very strange looking pieces of flint.

Cache blades: (Pl. 3, Nos. 54-65.) The blanks from which these spearpoints were made are frequent on sites with the broad spears and are occasionally found as caches. They were elaborated from very large spalls. They include two forms: the broad pentagonal blade and the rounded base type. The first is represented in what is probably the prettiest cache found in Pennsylvania, a set of seven blades discovered in road-building in Kutztown, Berks County, and illustrated elsewhere in the literature.[6] The second form made up a cache of eight blades found about 1890 in digging a reservoir for the town of Macungie, Lehigh County. This spot is not at the present water-source for the town, but somewhat uphill from there at a spot where the excavation is still obvious. These blades were exhibited in a hardware store window at Macungie for a time, and then distributed among the workmen who found them. The specimen which I illustrate (Pl. 3, No. 62) was the largest one in the cache, and is preserved in the collection of the late Oscar P. Knauss of Macungie, in the collections of the Lehigh County Historical Society, Trout Hall, Allentown. A somewhat smaller specimen from the same cache is preserved in the collection of Frank F. Huber at Pennsburg, Lehigh County. Other specimens, not known to be parts of caches, are illustrated to show the range in form of these thin, sharp-edged, very boldly flaked blanks. Sometimes such blanks show wear from use as knives.

Lithic material: Spearpoints of this type are most often of Pennsylvania Jasper, and rarely of other materials. Rhyolite is the most frequent of the minority materials, and rhyolite specimens are ordinarily found in the Schuylkill drainage where the jasper examples abound, rarely in the Susquehanna. The jasper specimens are usually of very carefully selected material, of much better quality than the run-of-the-mill stone at the quarries. Sometimes the jasper used is a rare variant of the Pennsylvania stone, apparently a phase of the jasper which was not used by other peoples or in other times. Actually, even chips of this stone are diagnostic of a site of this complex. This peculiar stone sometimes has a greyish-white, chert-like ground, variegated with opaque brown-red splotches, white opaque spots, and dark grey areas. In other examples it is a purplish-grey, mottled and streaked with dark blue-grey, reddish, or bluish zones. Sometimes the mottling is absent, and the whole specimen is blue-grey, pink-brown, violet-brown, tan, orange-red, pink, greenish, or near black. The mottling pattern may be blotches, dendritic structure in black, veining, or brecciation, and there is almost no limit to the variation or the combinations. (Pl. 2, Nos. 1, 9, 11, 12, 16, 22, 31, 32, 36, 37, 46-48, 64; Pl. 3, No. 1, 15, 17, 30, 32, 33, 36, 40.) We do not know where they obtained this stone, but it intergrades into normal jasper in some specimens, and it shows the same fine-structure in prepared cross-section. It either came from one of the jasper quarries which we have not yet found or from rare variants within one of the known quarries. The last alternative seems unlikely. These broad spears are also frequently made of jasper which is not like any samples from the known quarries, and a glassy bright yellow jasper used frequently for these spears is the most common of these varieties. An unduly large proportion of spearpoints of this type are made of the chalcedony-like phases of the jasper and from the chalcedony vein-filling rarely found in sizeable pieces in the jasper quarries. These peculiar jasper varieties seem to be restricted to this type of projectile point. I have also seen four specimens of this type made from a bright jade-green jasper which I have never seen elsewhere.

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[6] There is a printer's proof of this cut in the Pennsylvania State Museum files, but I have not yet been able to trace its publication. This cache should be described separately when I have traced its bibliography. The specimens are listed as follows: D 748, "7 knives, jasper, cache, found while excavating to straighten Socony Creek, 100 yards south of the Main Street Bridge in Kutztown, Berks Co." Specimens in Pennsylvania State Museum Collections.

Occasional specimens of this type were made of other materials, including Onondaga Chert from central and western New York (Pl. 3, No. 31), black flint, Ordovician Chalcedony from eastern Pennsylvania, Deepkill Chert and Normanskill Chert from the Hudson Valley, and Flint Ridge Chalcedony from Ohio. A single specimen found in Lebanon County by Sam Farver was made of pink agatized wood. Spears of this type were very rarely made of argillite, quartzite, or other rougher stone. Ordinarily they were made from the very finest flint available, with a conspicuous emphasis on attractively colored and mottled materials of some rarity. Actually, specimens made of materials other than jasper are rare. Judging by collections from the jasper quarries and their associated workshops, the people who made these broad spears were responsible for most of the digging at the quarry near Lyons, in Berks County. Their relics are somewhat less conspicuous at Vera Cruz, but they certainly did do a fair portion of the quarrying so apparent at this jasper outcrop. They do not appear to have utilized the Durham or Macungie quarries at all, since the distinctive jasper variants of these outcrops are not found in the broad spears and since broad spears and rejects from their manufacture are not conspicuous at these sites. They also appear, judging by certain jaspers represented in the spearpoints, to have known of other jasper outcrops which have not been found by later Indians or by modern collectors.

Geographic range: Spearpoints of this type are very rarely found in the main Susquehanna Valley, and the stray examples found here are more often of jasper than of rhyolite. The people who made this type of broad spear seem to have been restricted to the Schuylkill Valley and the drainage systems of the streams entering the Schuylkill from the North. Stray specimens and sites of this complex are abundant in this area, and actual sites of this complex are as yet unknown elsewhere, except on the eastern borders of the Susquehanna Valley. Stray spears of this type, of Pennsylvania Jasper, are sometimes found on the Delaware, but they are surprisingly frequent in the Hudson Valley. Spears of this type, made of Hudson River flints, are well known both in eastern New York and in the Schuylkill drainage, and the one area with which the Perkiomen Complex seems to have had intensive contact was the Hudson Valley. I believe that these traded specimens in the Hudson-Mohawk drainage system are part of a very distinctive soapstone-vessel horizon there which has not yet been segregated from the series of artifact types classed as "Early Coastal" in the literature.[7] Although the peoples of the Perkiomen area used some rhyolite from the Gettysburg area, they left no abundant evidence of their visits to the Susquehanna. I believe that the Susquehanna Soapstone Vessel Complex fathered the Perkiomen Complex, and that in turn gave rise to closely-related cultures of the Delaware Valley and of the Hudson-Mohawk area. Despite this pattern of origins and dispersal, I think the four cultures represented were almost entirely contemporaneous with the Susquehanna Complex starting first but surviving through the same time interval that the others lasted. In each of these three secondary areas, the broad spearpoints of non-local origin include many more trade pieces or carried specimens which came from a southwestern direction than those from a northeastern direction, judging by lithic materials and typology. I think this is a result of the spread of a population with new techniques and a new economic pattern from the lower Susquehanna and Chesapeake Bay into the river systems north and east. We do not know whether they lived side by side with the peoples who carried the older local Archaic cultures, or whether they replaced them. In either case, the complexes of the soapstone vessel period seem to have no relationship to the culture which preceded them in the Susquehanna, the Schuylkill, the Delaware, or the Hudson.

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[7] Ritchie, loc. cit.

Sites: The Perkiomen Broad Spearpoints are at home in an area where there are no large rivers, and the sites are not those of a canoe-using riverine people. Soapstone vessel sherds are rare on these sites, and in fact the disc-shaped beads of soapstone are almost as frequent as pieces of broken stone kettles. Netsinkers likewise are rare on these sites, although the few examples are the end-notched form found on the Susquehanna. Sites are rarely on main streams, such as the Schuylkill, but are most frequently at stream junctures, such as the sites at the mouth of Maiden Creek, or towards the heads of small tributaries. In some places, as on the upper Perkiomen, they are mainly within large tracts of swamp on small streams. Frequently they are on low terrace edges, and almost never on hills or higher ground.

The westernmost site of this complex is the Weaver Site in Lebanon County, discovered by Sam Farver.[8] Here a predominant broad spear complex is found on a low terrace on the Swatara Creek, mixed with a minor Archaic occupation. The Archaic tools at this site are almost entirely of stones not represented in the broad spear complex. This site is conspicuous in that it has more rhyolite (almost a fourth of the chips and tools) than any other site of the Perkiomen type, although very few of the rhyolite spears are of the Susquehanna Valley type. Here, as at other similar sites, soapstone sherds are almost unknown, but soapstone beads are found. Likewise drills are infrequent compared to the Susquehanna, but scrapers are much more abundant. In the Perkiomen Complex, here and elsewhere, drills and scrapers seem always to have been rechipped from spearpoints, and not made as separate tools. The scrapers are rarely beveled, but are chipped from both faces (so-called "bunts" or "blunts") and are generally much worn (Pl. 3, Nos. 27-34). Rechipped spearpoints are more usual than in the Susquehanna, and many of them are grotesque tools, broader than wide, with very obtuse points or drill-like tips (Pl. 3, Nos. 36-38, 40, 42). The tiny points of these "drill-tipped" specimens are generally worn on their faces, and were apparently used for gouging or engraving rather than drilling. Not all of the rechipped spears had their points repaired; often a broken barb or a damaged ear was reshaped, and some of the reworked forms seem hardly usable (Pl. 3, Nos. 17-25). The drills sometimes were chipped from a very broad spearpoint without removing much of the ears, and the resultant cross-shaped drills are sometimes found in quite fanciful shapes (Pl. 3, Nos. 43, 50-52). To the best of our present knowledge, the spearpoints and the tools chipped from the broken spears, along with the few soapstone sherds, beads, netsinkers, hammers and adzes, make up the total complex, with no other tools included. This description includes everything at the Weaver Site that we can possibly ascribe to this complex, and the same is true of many other small sites in the region to the east. As in the Susquehanna Valley, the very large, thin, broad, flat flakes of this industry, never retouched or used as knives, are entirely different from the chippage of any other local complex. The flint spalls are the best clue to a site of this type.

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[8] The Weaver Site may be located on the Hummelstown, Pa., Topographic sheet, at a point 6¼ inches east of the west printed map margin and 9 35/32 inches north of the south map margin.

A site at Shimerville, Lehigh County, discovered and studied by James Miller of Allentown, is important because it is the only major workshop site of this complex known. Practically the only finished tools found on the site are Perkiomen broad spears, and they are much less abundant than are broken blanks for this type, both pentagonal and round-based. About ten per cent of the chippage, blank fragments, and spearpoints found here are of the peculiar variegated jasper described earlier, and the remainder is brown jasper which most closely resembles samples from the Vera Cruz quarries. No other site is known with anything like this quantity of the variegated stone; in fact, no other single site has produced more than two or three tools and a half-dozen spalls of this rare flint. The absence of other tools and the preponderance of rejectage suggest that this site was predominantly a workshop near the place of origin of the stones preferred in this complex.

Sites of the Perkiomen Complex are rarely as large or conspicuous as those of the Susquehanna Complex, and the industry is best known as a recurrent complex on mixed-up sites. Pure sites are not frequent or large, because the sites are not in a special setting like the river-bank sites of the Susquehanna. They are generally on places where Archaic peoples had camped. Whereas in the Susquehanna Valley people at this time exploited the wild life of the river valley as their major economic resource, the peoples of the Schuylkill occupied a different ecological niche. They took to the swamps and the floe-lands, apparently depending more on game and less on fish than their Susquehanna Valley cousins. Neither group, however, followed the earlier Archaic fashion, when people hunted and gathered as they traveled along the high stream terraces and the hills as much as the lowlands. Nowhere in the Perkiomen region are soapstone kettles and netsinkers conspicuous; I think they are lacking because of the different ecological setting rather than because there is a difference in time between the two complexes.

As in the Susquehanna, we have been able to find no pits, no evidence of excavation by Indians, in sites of this period. The absence of pits is not merely a factor of our ignorance; there just aren't any in the sites, and apparently they weren't dug. However, rarely a cache of unfinished spears, or, in the Susquehanna, a whole soapstone pot, is found where it was buried by people at this time. I suspect that such caches are probably the only surviving content of graves from which all bone has long since disappeared, and that we may eventually hope to find such graves ourselves or even perhaps to find cemeteries of these cultures. Such graves, midden accumulations, or campsites buried in river loam seem to be our only hope for excavation data on these complexes in the future.

LEHIGH BROAD SPEARPOINT

(Pl. 3, Nos. 1-15, Fig. 1; e, f.)

General Form: Broad spears with straight or tapered tangs, often asymmetrical, with greater variability in breadth than the two previous forms.

Tip: As the Perkiomen type.

Blade: Triangular, in shape closely resembling either the Susquehanna or the Perkiomen types. A few examples have the greatest relative breadth of any large spears.

Ears: Like the Perkiomen type, with barbing less frequent and with the break in contour between the ear and the tang poorly developed. The ears generally do not jut as strongly as in the other two types, but are frequently very asymmetrical.

Tang: Small in proportion to blade, and usually square in outline, less often tapered. The tang edges are not constricted as in the other two types. All tang edges are always ground smooth, with the smoothing extending a short distance out on the ear, sometimes to a pronounced break in outline. Base of the tang is flat or convex, never concave or pointed.

Size: As the Perkiomen type .

Cache blades: These spearpoints were made from the same round-based cache blades as the Perkiomen type, but not from the pentagonal form. At least six caches of such blades, of jasper, have been found in the Lehigh and the upper Delaware Valleys. Essentially, the Lehigh Broad Spearpoint is more like the blank form than the other two types; the people who made this type used the blank almost as it was, with a minimum of chipping to finish the blade and shape the tang, whereas the points of Susquehanna and Perkiomen types were more modified and more elaborately reshaped in making a point from a blank. One illustrated example of the Lehigh type was chipped from a hematite-stained blank (Pl. 3, No. 15); the two chipping stages are very distinct, with the old blank surfaces still stained red. I have drawn an ink line around the stained surface, and this specimen shows very well the chipping done in finishing a spearpoint. As with the other two types, the people who made these spears seem to have carried a stock of blanks with them, and to have finished the point shortly before it was to be used. The advantage of this is obvious; any finished points carried for a time would suffer damage and breakage, but the blanks or cache blades required less careful transportation.

Lithic material: Most spearpoints of this type are of Pennsylvania jasper, with occasionally a specimen of the odd variegated jasper described earlier. A few specimens are of black flint.

Area of distribution: The homeland of this spear type is the area drained by the Lehigh and by the upper Delaware, with most sites of this type quite close to the major rivers. The jasper originated within the region where the Perkiomen type is at home, and this area (Berks, southern Lehigh, and Bucks Counties) yields surprisingly few specimens of the Lehigh type. There seems to be no significant extension of this spearpoint type into the Delaware Valley south of Easton, and, in fact, the lower Delaware is outside the area of distribution of the broad spear series. The Lehigh Broad Spears extend for an unknown distance up the Delaware Valley above Port Jervis, but do not spill over into the Wyoming Valley or the eastern drainage of the North Branch of the Susquehanna.

Associations: I hesitate to discuss this spear type or its complex at any length because I know far too little of this problem from my own field experience, and I have no personal knowledge of any closed or pure sites of this complex. The Lehigh Broad Spearpoints are ordinarily found on sites with soapstone sherds, and apparently characterize the Transitional Period of the upper Delaware. Associated drills and scrapers seem to be entirely rechipped from spearpoints. They are like the scrapers and cruciform drills of the Perkiomen Complex, except that the tangs have the squared or tapered form of the Lehigh Broad Spear rather than the constricted tangs of the other two types (Pl. 3, No. 26, 53). The drills are rarely found in good condition, but some of the broken bases have very long, slender cross bars, either squared or pointed, and include the most elaborate and attractive drills found in Pennsylvania. Heavy netsinkers are also found on the same sites, and, with the abundant soapstone sherds, indicate that the Lehigh Complex of this period was a riverine, canoe-using, fishing culture much like the Susquehanna Soapstone Complex.

RELATED PROJECTILE POINT FORMS

There are few other projectile points of the local area which seem to be in any way related to the broad spear forms. Certain semi-lozenge shaped points found in the Brewerton and Vosberg Complexes of New York and elsewhere in the Archaic complexes of Pennsylvania show occasional basal grinding, but they definitely do not intergrade into the broad spears. The intergrades with the broad spear series suggest that the Lehigh and Perkiomen types had their origin in the Susquehanna type. The dispersal of the Susquehanna type throughout the Susquehanna Valley represents essentially the expansion of a rhyolite industry from the south, from the area near the mouth of the river. In the general area of the rhyolite outcrops, in the drainage systems of the Antietam (the Potomac watershed) and of the Conewago, Conococing, and Sherman's Creeks and the lower Juniata River (of the Susquehanna watershed), rhyolite industries of Archaic times are abundantly represented on hilltop and terrace edge sites. These sites spill over into the lower Susquehanna and the Potomac, but are minor elements in those areas, mere outliers in the local Archaic industries there. These rhyolite industries are varied and poorly understood, but the terminal Archaic horizon, as I understand it, consists mainly of rough corner-notched projectile points with some stem constriction, occasional basal grinding, and no definite barbs, the corner-notches forming a haft about as long as it is wide. This is the lithic tradition which seems to be the direct ancestor of the Susquehanna Broad Spear; the projectile points resemble one another, and the Archaic forms do show some basal smoothing. Peoples of this mountain region seem to have moved into the Chesapeake area and adapted themselves to a shore life, adapting a riverine pattern which was developing along the Potomac and along the lower Delaware at the same time. The subsequent spread of these people through the Susquehanna, Schuylkill, upper Delaware, and Mohawk-Hudson Valleys carried the broad spear types and the soapstone vessels into these areas.

There are only a couple of other spearpoint types which seem closely related to the broad spears, and these all seem to be derived from the Susquehanna Broad Spear rather than form the other types, if indeed, they do have their origin here. The most abundant form is the type, rather poorly definable, which local collectors refer to as "serpent-head shaped." These are found throughout eastern Pennsylvania, with a major concentration in the Lehigh and middle Delaware Valleys. They are usually short and small, asymmetrical, with rounded shoulders and convex edges near the tip. About half of them have the tang and base edges ground, and the grinding extends almost to the rounded ear. (Fig. 1, No. g.) They are usually made of jasper or chert, and actually intergrade in all details of shape and manufacture with extreme forms of the Susquehanna Broad Spear. They are found in fair numbers on sites with some quantity of Vinette 1 pottery in this area, and this association seems strong enough in my experience that I believe they go together. I believe they are a direct descendant of the Susquehanna Broad Spear, in the immediately succeeding cultural stage at an Early Woodland time level.

The other form is less abundant, with a concentration in the middle and upper Delaware Valley, and is not so well known. It is a long, slender spear with strong tang constriction, straight or concave base, and rounded slight ears, called "Fish tail points" by the local collectors. (Fig. 1, No. h.) About half of these show basal grinding and smoothing of the tang edges well up into the edge of the ear. Like the last type, it seems to go with Vinette 1 pottery, and is probably of the same age. Both of these point types are slim rather than broad, and both lack the cutting corner of the broad spears, and, instead have the ears carefully rounded off rather than angular and jutting. Their closest relatives, typologically, are the broad spears, and both seem to have been evolved from the broad spear tradition. Both also suggest the spearpoints of the Orient Focus of eastern Long Island, mentioned later, and the spears of Vinette 1 pottery times in central New York.

RELATED CULTURES OF OTHER AREAS

Other nearby areas, besides those previously discussed, have abundant fragments of soapstone pots and associated complexes with distinct spearpoint types. The lower Delaware Valley, for example, from Easton south, lacks the broad spear types. Instead, the soapstone-bearing sites here include an argillite industry, based on material obtained from quarries at the mouth of Gaddis Run, Bucks County, and at several other localities in adjacent parts of New Jersey. The spearpoint type of the soapstone vessel horizon has not here been segregated with certainty, but it is either a straight-stemmed spear or the Koens-Crispin blade, a leaf-shaped, boldly flaked large spear without stem constriction but tapering to a squared base, with a rounded, obtuse, thin tip.[9] A few spearpoints found in this area are of the Perkiomen Broad Spearpoint type, made of argillite and of jasper. The peoples of this area obtained their soapstone from the same Lancaster County quarries as did the Susquehanna people, judging by the argillite picks found both at the quarries and in New Jersey. Nevertheless, their chipped-stone tradition seems to have been of purely local origin rather than one derived from the Susquehanna, the Potomac, or the upper Delaware. Soapstone-tempered pottery was even more abundant in this lower Delaware complex than it was on the Susquehanna.

In the Potomac Valley, soapstone sherds and fragments of soapstone-tempered pottery are abundant, as they are on the Rappahannock and other nearby streams. The soapstone here was obtained from local sources,[10] and the flinty materials used for tools seem likewise to come from local pebble sources. I am not, however, by any means convinced that the spears and other tool types of this soapstone complex have been correctly identified, or that soapstone-tempered pottery is later than soapstone vessels, as has been stated by at least one local student.[11] I know of no spearpoint forms of this area which resemble our broad spear type at all closely. However, I think it is very probable that the Potomac was the center of origin for the soapstone vessels, the soapstone-tempered pottery, and the riverine economy which characterized the Transitional Period complexes of our area. It is also apparently the center from which the technique of soapstone vessel manufacture spread into the southeastern Piedmont, although little is known there of this period-

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[9] Dorothy Cross, **The Archeology of New Jersey,** Vol. 1, Trenton, 1944, pp. 117-127.

[10] Holmes, 897, pp. 106-133.
Holmes, **Handbook of Aboriginal American Antiquities,** Vol. 1, Bull Bur. Amer. Ethnol. 60, 1919, pp. 228-40.

[11] Manson, 1948.

On eastern Long Island and the adjacent Connecticut coast the Orient Focus, so far known only from graves, is a sharply distinct local culture with soapstone vessels, fish-tail spears (some of them Pennsylvania Jasper), and the earliest pottery of the area, a sherd from a grit-tempered pot.[12] The spearpoints seem to be related to, and include, our two narrow forms. However, the Orient material seems as distinct from local cultures there as our Transitional complexes here are distinct from those which preceded and followed them. The soapstone vessels were part of a new way of life which had little continuity with earlier patterns. Carlisle Smith has identified the Orient Site as a cemetery of the North Beach Culture, of Early Woodland times, but this is surely in error; the Orient Complex is older and is probably a precise contemporary of Transitional complexes in Pennsylvania and Maryland.[13] Likewise, in eastern Massachusetts, William S. Fowler recognizes the soapstone bowl period as a separate time horizon with distinctive artifact types. Although he sees continuity between the soapstone complex and earlier and later cultures, it nevertheless appears as a distinct, chronologically restricted complex, not to be confused with Archaic or Early Woodland cultures of the area.[14]

In central and western New York the Transitional Period is poorly known, and may not even be present on the shores of Lake Ontario. However, where it is found, it seems to be a mere extension of the Susquehanna Soapstone Complex with Susquehanna Broad Spearpoints of rhyolite. North of here, in Ontario and in northern New England, comparable cultures seem to be entirely lacking, and, judging by the complete absence of soapstone vessel fragments, neither these cultures nor the stone bowl tradition penetrated into the northern area. On the upper Ohio, we know nothing of the Transitional Period except the stone vessel sherds, which are especially abundant on the Allegheny in western Pennsylvania and on the Ohio in West Virginia. We do not know what spearpoints went with the soapstone in this region; broad spears like our types are unknown, so some very different type is to be expected. Such a Transitional complex, when discovered, should be of great importance because it must represent the last culture prior to Adena and should throw considerable light on Adena-Archaic relationships, as well as on the origins of Adena pottery making. West of here, the soapstone bowls do not seem to be of any great importance, and the few stone bowls from the upper Mississippi seem to be rare copies in limestone of soapstone vessels.

Soapstone vessels are, however, important in some parts of the southeast, apparently having been made throughout the Appalachian mountain chain and the Piedmont, and they are important, if not numerous, artifacts in Louisiana and Florida. In Louisiana, soapstone bowls of non-local origin were used in small numbers in the Poverty Point Culture.[15] Here both soapstone and other stones were not available, and these pre-ceramic people apparently boiled most of their food in baskets heated by clay "potstones." In Florida the soapstone bowls were also an import, but, as in the Northeast, they raise the whole question of the origins of pottery making in North America.[16] The earliest pottery of Florida, made in great quantities, was a fiber-tempered, thick-walled, bowl-shaped vessel, often with lugs. We do not yet know whether the soapstone vessels in Florida are older than the fiber-tempered pottery. If the soapstone bowls are older, then the pottery was probably invented as a copy of a stone bowl in an area where soapstone was not available. If the pottery is older, then all of our soapstone vessels in the East probably had their origin as stone copies of the earliest southeastern pottery. I favor the first guess, that pottery developed from the stone vessel, but, until this question of relative age is solved by Florida archeologists, the question will be forever in doubt. In the Northeast, the development of pottery from the soapstone vessel seems certain. The earliest pottery of the area, certainly older than any Adena ceramics and older than Vinette 1 in New York, appears in the Transitional Period sites in New York, Pennsylvania, New Jersey, Maryland, and Virginia. Such pottery is always a precise copy of the soapstone vessel, with flat base, erect sides, rectangular outline, lugged ends, and smooth surfaces (except for the base, which was built on a mat). These pots were tempered with crushed soapstone, which, on close examination, turns out to be smashed up sherds from broken stone kettles. This pottery always appears on sites where soapstone vessel sherds predominate, and is older than any other northeastern pottery type. Both on the northern Piedmont and in New York there is some evidence that the next earliest pottery types are descended from this type, and I also believe that certain of the most primitive pottery forms are related to it.

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[12] Ritchie, 1944, pp. 227-32.

[13] Carlyle S. Smith, **The Archaeology of Coastal New York,** Anthrop. Papers Amer. Mus. Nat. Hist., Vol. 43, Part 2, 1950, pp. 135-36, 147.

[14] William S. Fowler, Ragged Mountain; Cultural Sequence in a Connecticut Quarry-Shelter, **Bull. Arch. Soc. Conn.,** 25, Sept., 1951, pp. 3-25.
Fowler, The Swan Hold Site, **Bull. Mass. Arch. Soc.,** Vol. 12, No. 2, 1952, pp. 1-5.

The basic problems of the Transitional Period are those pertaining to the origin and diffusion of cooking vessels and of the economic complexes which made their care and use possible. Neither the eastern hunters of the Archaic Epoch or the Mississippi Valley shell heap dwellers of the Late Archaic Period made any use of stone vessels for cooking, except perhaps in their terminal stages. When people began to depend on canoes for transportation or to settle down in permanent farming villages, pottery and stone cooking vessels became desirable. In the Transitional Period, there developed a canoe-using way of life, in which people traveled the streams feeding upon fish, wildfowl, and game killed at the waterfront. As this way of life spread in the Northeast, the soapstone pots spread with it, carried hundreds of miles from their places of origin in canoes. It would appear, from the distribution of sites and the way the people carried stone for vast distances, that such scouring of rivers by fishers and hunters involved traveling great distances, and that the prosperity of such communities depended upon their being able to hunt over hundreds of miles of river every few months. In this fashion, the tool types and the economic pattern may have spread very rapidly throughout the area. It is possible that Archaic hunters were at the same time ranging the whole state, and that the two culture types could exist at the same time without interference, since they spent most of their time in different habitats. If this were the case, we have remarkably little evidence of contact between the two groups. Unlikely as it may seem, the evidence from the sites suggests that these river people were expanding into nearly vacant country. The life of the soapstone bowl people was different from that of the local Archaic peoples, with their ancient hunting economy, and it was also different from the life of other Archaic peoples. The river dwellers of the Mississippi, the settlers on the coasts of the Caribbean in Archaic times, and the Archaic peoples of Florida depended largely upon shellfish for their staple diet, and their life seems to have been quite sedentary. Our peoples of the Transitional Period seem to have made no use of river mussels or of the coastal oysters and clams, and, in fact, there seems to have been no use of shellfish in this Middle Atlantic area until Middle Woodland times. In terms of the general economic pattern, the Transitional Period sites suggest the Hopewell Cultures of the Ohio and Mississippi more than they do any other; the settlement pattern along major rivers, the canoe-communication strongly developed, the great economic dependence upon fish and river life, the extensive transportation of flints and other stones, are all very suggestive parallels between Hopewell and our cultures. On the other hand, the Hopewell Cultures include a great usage of shellfish and of acorns for food, the sites are permanent villages rather than riverfront camps, and the Hopewell people almost certainly practiced some sort of agriculture. However, the Adena predecessors of the Hopewell Complexes shared in these parallels also, and perhaps some of the river life bias of Hopewell and Adena was drawn from the pattern of the Transitional Period.

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[15] Clorence B. Moore, **Aboriginal Sites in Louisiana and in Arkansas,** reprint from **Journal,** Acod. Nat. Sci., Philodelphio, Vol. 16, 1913, pp. 66-76.

[16] John W. Griffin, **Early Hunters of Florida,** no imprint, 4 pp., Goinesville, 1952, p. 3.

I have tried to sketch the problems of the origin and spread of soapstone vessels, of the pottery derived from them, of certain projectile point types, and of an economic pattern of canoe-fishing and hunting on major rivers. In terms of our present knowledge, we can only outline some questions and are hardly able to answer any of them. In our own local area, we seem to be able to show some pattern of the dispersal of such complexes over the whole region from one area in the southern part, and the mixture of non-local and local traits into several very simple but distinctive complexes. Beyond this there must be some much larger picture which we cannot yet grasp.

KEY TO PLATES

Plate 1: Broad spearpoints of two types, and cache blades, in rhyolite.

Type:
- Nos. 1-26: Susquehanna Broad Spear type.
- No. 27: An unfinished specimen of the Susquehanna type.
- Nos. 28-47: Perkiomen Broad Spear type.
- Nos. 48-55: Rhyolite cache blades for the broad spear types.

Collections:
- Nos. 37-41: S. S. Farver Collection, Palmyra, Pa.; specimens from Le89, the Weaver Site.
- Remainder: Pennsylvania State Museum Collections as follows:
- Nos. 1, 28, 30, 36, 42, 43, 53: Cat. No. E52. D. W. Laverty Coll., consisting allegedly of specimens all from Middletown, Dauphin Co., Pa. Most of Laverty's collection came from the site of the present Olmsted Air Force Base.
- No. 2: PaO/32. Haldimand O'Conner Collection. Location unknown.
- No. 3: PaO/1. Same as No. 2.
- No. 4: D245.56. Moselem Creek Valley, Berks Co. Henry K. Deisher Collection. In these older catalogs, numbers after the decimal indicate merely individual specimens in a catalog lot. (All D numbers are the Deisher Coll.; all specimens used here are from eastern Pennsylvania.)
- No. 5: K35. Mary Ellen Noll Collection, allegedly all from the vicinity of Millersburg, Dauphin Co., Pa. (All K numbers are the Noll Collection.)
- Nos. 6, 29, 33: D168.11, D168.75, D168.68. Tulpehocken drainage system, Berks Co.
- Nos. 7, 15: D330.1, D330.6. Willow Creek Valley, Fleetwood, Berks Co.
- No. 54: Da12/6. O'Conner Collection.
- Nos. 8, 17, 22, 27, 31, 35, 45, 46: Not cataloged; no data.
- No. 9: La12/104. Eschelman Site, Washingtonboro, Lancaster Co., square 45R5, level 3. This specimen, excavated from a Susquehannock dump of perhaps 1610-1640, in the summer of 1950, is one of about thirty ancient types of tools found enclosed in the built-up ground of a thick midden. These various old points are of types not made by the Colonial Susquehannock, and are all deeply weathered. They represent relics found by Indian collectors, and were probably found by Susquehannocks on the islands opposite Washingtonboro and carried home as curios, later swept into the dump by Indian housewives. They certainly were not made by the Susquehannocks who lived on the Washingtonboro Site, and are of con-

siderable interest as relics which attracted the attention of later Indians.

No. 10: B245. Gerald B. Fenstermaker Collection, Lancaster Co., Pa.

Nos. 11, 14, 26: G121.19, G121.15, G121.13. Steuben Jenkins Coll., Wyoming Valley

No. 12: La14/1. O'Conner Collection, Islands opposite New Holland, York County.

No. 13: D805.137. Sacony Creek Valley, Berks Co.

Nos. 16, 21: F55. Region of Highspire, Dauphin Co., Harry E. Hoke Coll. #21 is retouched from a thin flake, and the opposite face shows almost no flaking.

Nos. 18, 52: Da5/6. O'Conner Coll., Haldimand's Island, Dauphin Co., March 26, 1902.

No. 19: J202.14. Leiphart Collection, vicinity of Long Level, York Co. All specimens allegedly from York Co. (The J series of numbers includes other collections than Leiphart's.)

Nos. 20, 23, 24: Pa0/9, Pa0/3, Pa0/4. O'Conner Coll. Location unknown.

No. 25: F54. (See No. 16.)

Nos. 32, 49, 50, 51, 55: Da13/1, O'Conner Coll. Riverfront above Middletown, Dauphin Co.

Nos. 34, 47: K23. See No. 5. No. 34 has worn edges.

No. 44: D318.38. Willow Creek Valley, Fleetwood, Berks Co.

No. 48: Da10/1. O'Conner Coll. Clempson's Island, Dauphin Co.

Plate 2: Broad jasper spears of two types.

Type:

Nos. 1, 9, 11, 12, 16, 22, 31, 32, 36, 37, 46, 47, 48, 64: of the peculiar variegated jasper-chert described in the test.

Remainder: of the usual Pennsylvania jasper.

Collections:

Nos. 7, 25, 40, 43, 47: Collection of S. S. Farver, Palmyra, Pa.

Remainder: Pennsylvania State Museum Collections, as follows:

Nos. 1, 14, 16, 17, 21, 26, 29, 38, 39, 47, 51, 53, 56: D741.7, D741.42, D741.71, D741.32, D741.21, D741.31, D741.76, D741.41, D741.-3, D741.75, D741.94, D741.10, D741.40. Sacony Creek Valley, Berks Co. No. 14 is not rechipped, No. 16 is, and No. 20 had the blade rechipped from both edges.

No. 2: D445.41. Schuylkill Valley between Hamburg and Pottstown, Berks Co.

Nos. 3, 18, 45: D108.1, D108.10, D108.16. Manatawny Creek Valley, Berks Co. The tip of No. 18 has been rechipped.

No. 4. E51. Laverty Collection, Middletown, Dauphin Co., Pa.

No. 5: D804.8. Sacony Creek Valley, Berks Co.

Nos. 6, 10, 11, 23, 42, 55: D168.37, D168.86, D168.28, D168.62, D168.110. Tulpehocken drainage area, Berks Co. Nos. 10 and 55 are not rechipped, No. 42 is.

Nos. 7, 13, 22, 59: D572.9, D572.3, D572.14, D572.7. Perkiomen Valley, Berks Co. Tang corner rechipped to this shape on No. 7, No. 59 is probably rechipped.

Nos. 8, 63: Not cataloged, no data. No. 63 was partially rechipped to a new tip, with only the left part of the break thinned, when discarded.

No. 9: K23. Noll Collection, vicinity of Millersburg, Dauphin Co.

No. 12: E52. See No. 4. Tip is intact.

Nos. 15, 30. 58: D494.21, D494.19, D494.14. Lehigh Valley between Mauch Chunk and Easton.

No. 19: D318.36. Willow Creek Valley, Berks Co.

Nos. 20, 27, 33: D805.5, D805.9, D805.57. Sacony Creek Valley, Berks Co.

Nos. 24, 31, 54, 64: F57. Hoke Coll., vicinity of Highspire, Dauphin Co.

No. 25: Found near Shellsville, Lebanon Co., on Manada Creek.

Nos. 28. 61: G121.9, G121.3. Jenkins Coll., Wyoming Valley.

No. 32: B245. Fenstermaker Coll., Lancaster Co., not rechipped.

Nos. 34, 35, 36, 41, 49, 57: D245.21, D245.23, D245.16, D245.39, D25.40, D245.54. Moselem Creek Valley, Berks Co. No. 36 shows slight wear on left edge from use as a side-scraper; beveled and probably rechipped.

No. 37: J149. J. A. Stober Collection, Lancaster County.

Nos. 40, 50: Slope below the Blue Mountain, west of Indiantown Gap, Lebanon Co.

No. 43: Beverly, on the Conawaga Creek, Lebanon Co.

No. 44: Maiden Creek, between Kempton and Evansville, Berks Co. (From a labeled but uncataloged lot of the Deisher Coll.)

No. 46: G130.12. See No. 28.

No. 48: D31.9. Wyomissing Creek Valley, Berks Co. This specimen is retouched from a spall, with beveled, scraper-like edges; the opposite face is plane and flat, edges show no wear, and point is intact.

No. 52: D735.29. Sacony Creek Valley, Berks Co.

No. 60: B244. See No. 32.

No. 62: Wyomissing Valley, near Reading, Berks Co. From a labeled but uncataloged lot in the Deisher Coll. This broken specimen was not finished, judging by the sharp tang and by some of the edge chipping.

No. 65: D168.95. Tulpehocken drainage, Berks Co. This specimen is unfinished, with sharp tang edges, and thick, blunt tip.

Plate 3: Type:

Nos. 1-15: Lehigh Broad Spearpoints.

Nos. 16-24: Perkiomen Broad Spearpoints, rechipped forms.

No. 25: Susquehanna Broad Spearpoint, rechipped.

Nos. 26, 29-34: Scrapers made from Perkiomen Broad Spearpoints.

No. 28: Scraper made from Susquehanna Broad Spearpoint.

Nos. 35, 39-41: "Drill-tipped" rechipped Susquehanna Broad Spearpoints.

Nos. 36-38, 42: "Drill-tipped" rechipped Perkiomen Broad Spearpoints.

No. 43: Rechipped drill of the Perkiomen type.

Nos. 44-49: Drills of the Susquehanna type.

Nos. 50-52: Drills of the Perkiomen type.

No. 53: Drill of the Lehigh type.

Nos. 54-65: Cache blades for the Perkiomen and Lehigh Broad Spearpoints.

Lithic material:

Nos. 1, 15, 17, 18, 32, 33, 36, 40: of variegated jasper-chert.

No. 35: Red rhyolite.

No. 25: Rhyolite.

No. 30: Orange-red chalcedony.

No. 31: Onondaga Chert, eastern New York variant.

No. 42: Brown jasper of concentric agate-like structure.

Remainder: Pennsylvania jasper.

Collections:

Nos. 19, 21, 38: S. S. Farver Coll., Palmyra, Pa.

Nos. 55, 57, 60: James Miller Coll., Allentown, Pa.

No. 62: Lehigh County Historical Society Collections, Trout Hall, Allentown, Pa.

Remainder: Pennsylvania State Museum Collections, as follows:

Nos. 1. 2, 5, 6. 8, 9 18, 56. 65: D741.143, D741.45, D741.51, D741.30, D741.43, D741.142, D741.5, D741.116, D741.126. Sacany Creek Valley, Berks Co. No. 1 is variegated chalcedony-jasper. Tip of No. 9 is worn, edges are not. No. 18 has a thick, blunt retouch.

No. 3: D418.3. Schuylkill Valley between Hamburg and Pottstown, Berks Co.

Nos. 4, 27, 40: B685. Fenstermaker Coll., Carbon Co. No. 27 has all edges and faces worn, with a thick, blunt tip; No. 40 has the tip deeply worn, especially at the end and on the faces.

Nos. 7, 11: D75.3, D75. Maiden Creek Valley, Berks Co.

No. 10: D805.27. Sacony Creek Valley, Berks Co.

Nos. 12, 14: D168.27, D168.61. Tulpehocken drainage, Berks Co. No. 12 has tip reshaped by chipping.

Nos. 13, 17, 24, 63: D245.65, D245.20, D245.53, D245. Moselem Creek Valley, Berks Co. No. 24 has the total blade edges rechipped, and shows no wear. Basal grinding is extreme.

No. 15: D741.63. Socony Creek Valley, Berks Co. Yellowish tan chert. Made from a hematite stained blank, so that the two chipping stages are very distinct. The boundary between them is traced by an inked line on the photograph.

No. 16: Wyomissing Creek, Reoding. Thick blunt rechipping, faces of point are polished by handling, but edges are splintery and unworn. From an uncataloged lot in the Deisher Coll.

No. 19: Le89, Weover Site; has a thin sharp retouch.

No. 20: PaO/1. O'Conner Coll., location unknown. Thin sharp edges.

No. 21: Horper's, Lebanon Co.

No. 22: D196.2. Tulpehocken drainage, Berks Co. Thin sharp retouch.

Nos. 23, 56, 59: D494.23, D494.22, D494.4. Lehigh Valley between Mauch Chunk and Eoston. Thin, sharp retouch.

No. 25: Not cataloged, no data. Broken by splitting fracture, later retouched to sharp edge and thin point without change in contour of broken edge.

No. 26: D494.8. Lehigh Valley between Mauch Chunk and Eoston. Base of tang broken off before reuse. Both faces worn by handling, and tip worn down, but not edges. Tip thick and blunt, not sharpened, but worn away in use as a scraper.

No. 28: K27. Noll Coll., vicinity of Millersburg, Douphin Co. Thin sharp edge, worn along front end, not near ears.

Nos. 29, 33, 34: D33.11, D33.9, D33.12. Wyomissing Creek Valley, Berks Co. No. 29 has thick, blunt splintered front edge, slightly worn; No. 33 has a thick, blunt, splintered tip with slight wear; No. 34 has had the broken end used as scraper without rechipping; worn to rounded contour with facets reddened by frictional heat.

No. 30: D763. Socony Creek Valley, Berks Co. Orange-red chalcedony. Thick, blunt end, much worn.

No. 31: D341.1. Fleetwood, Berks Co. Very thick, blunt, splintered end, deeply worn, but no wear at ears.

No. 32: Not cataloged, no data. Thick rounded tip, much worn, and faces polished. Mottled jasper-chert.

No. 35: G76.68. Jenkins Coll., Wyoming Valley. thick, unworn tip. Red rhyolite.

No. 36: E61. Loverty Coll., vicinity of Highspire, Douphin Co. Variegated chalcedony-jasper. Needle-like unworn tip.

No. 37: La14/1. O'Conner Coll., Islands opposite New Holland, York Co. Extreme tip slightly worn.

No. 38: Le87, Wilhelm Site, Lebonon Co. Tip not worn.

No. 39: Da5/6. O'Conner Coll., Haldimond's Island, Douphin Co. Drill part of tip worn on all faces.

No. 41: F55. Hoke Coll., vicinity of Highspire, Douphin Co. Unworn.

No. 42: G121.20. Jenkins Coll., Wyoming Valley. No wear, note agate-like concentric structure of this deep brown jasper.

Nos. 43, 50, 53: D220.16, D220.21, D220.8. Moselem Creek Valley, Berks Co. No. 43 has thick, blunt edges, tip has remnant of break-plane, not worn.

Nos. 44, 52: F70. See No. 41. No. 44 has worn edges.

No. 45: J155. Stober Coll., Lancaster Co.

No. 46: PoO/1. Location unknown, O'Conner Co'l Edge worn.

Nos. 47, 49: E60. Loverty Coll., vicinity of Highspire, Douphin Co. Both show wear.

No. 48: Not cataloged, no data. Very badly worn on faces and edges. Still has soapstone dust in crevices and recesses.

Nos. 55, 57, 60: James Miller Coll., Allentown, Po. Shimerville Site, Lehigh Co.

No. 58: D31. Wyomissing Creek Valley, Berks Co.

No. 61: D Lehigh Valley (not cataloged, but in a labeled lot).

No. 62: Oscar P. Knauss Coll. From cache at Macung'e Reservoir, Lehigh Co.

No. 64: D318. Fleetwood, Berks Co.

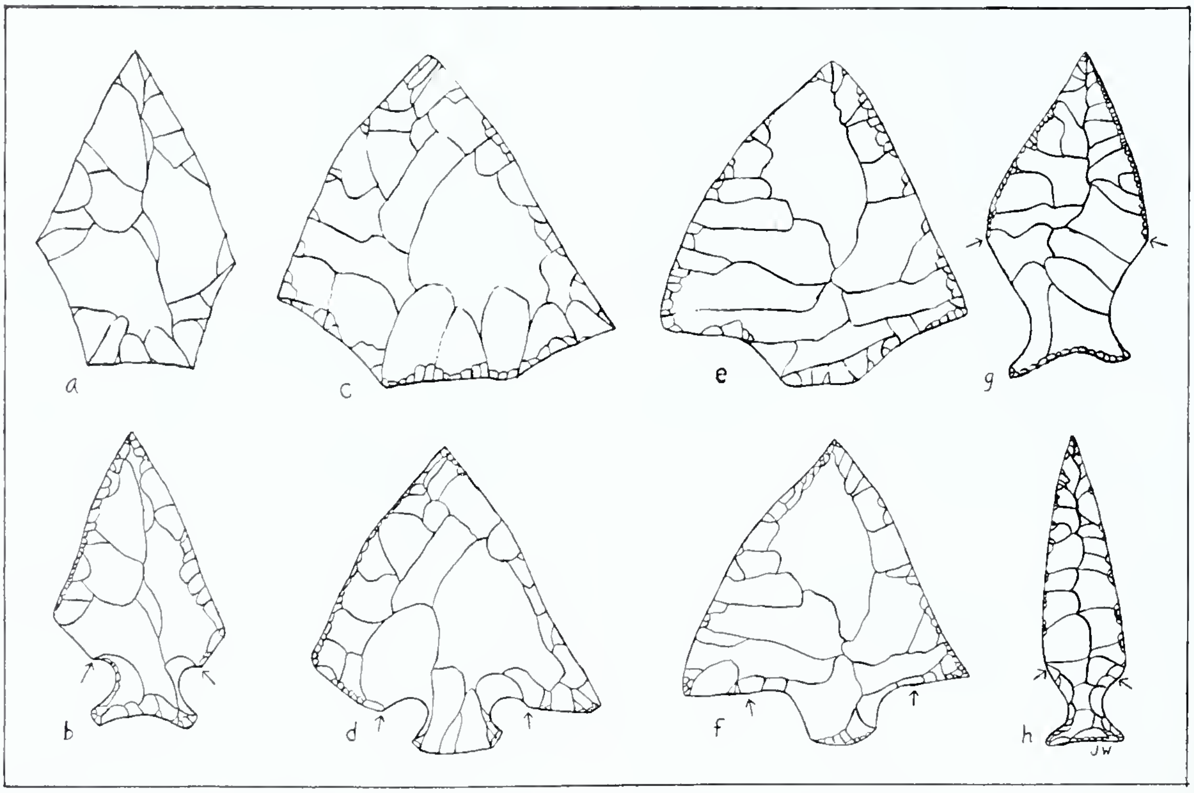

FIGURE I. Idealized sketches of blanks and finished spears of the Susquehanna (a, b), Perkiomen (c, d), Lehigh (e, f), serpent-head shaped (g), and fishtail (h) types. Arrows indicate limits of basal smoothing.

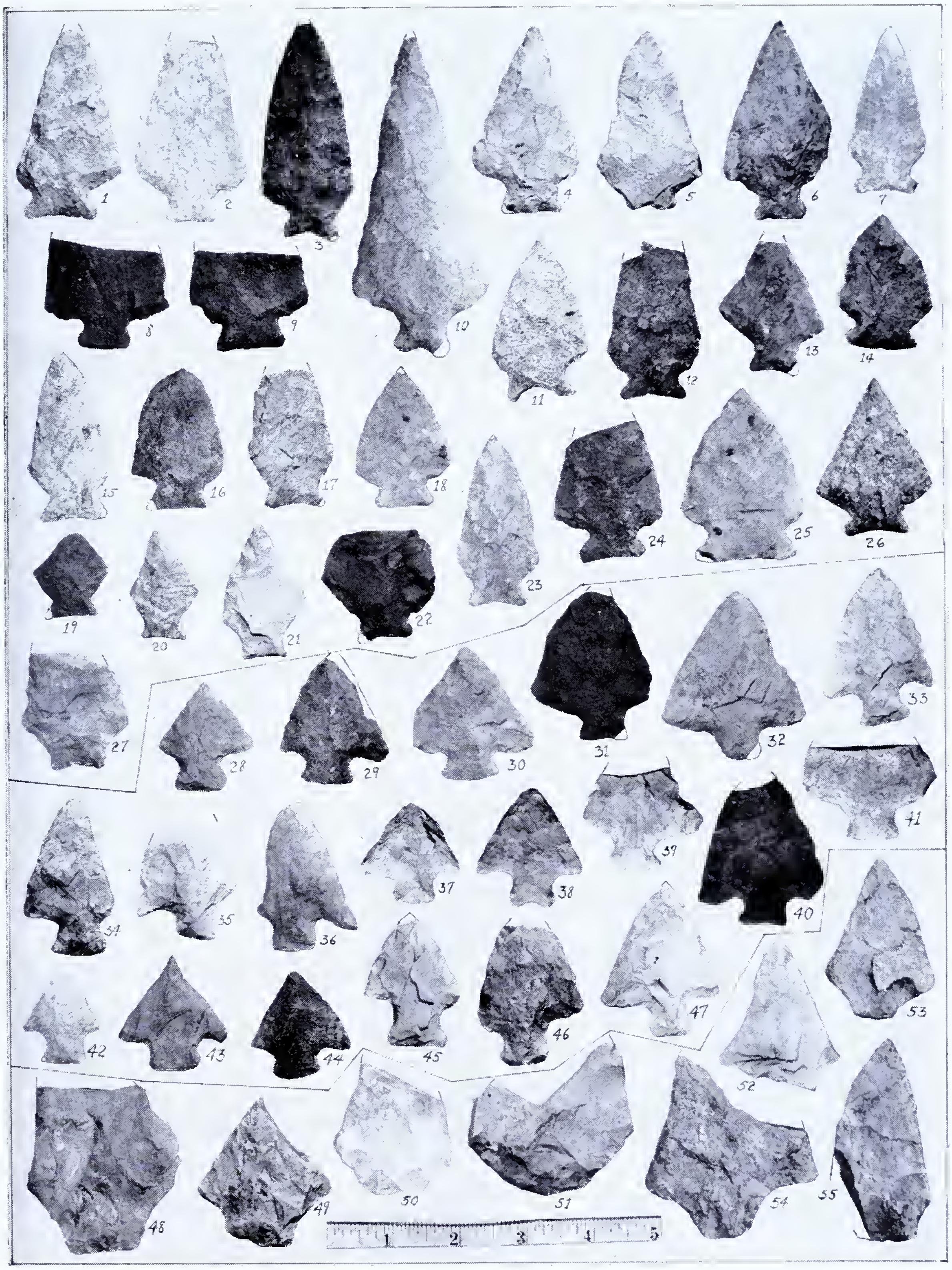

PLATE I. Susquehanna and Perkiomen broad spears and blanks of rhyolite.

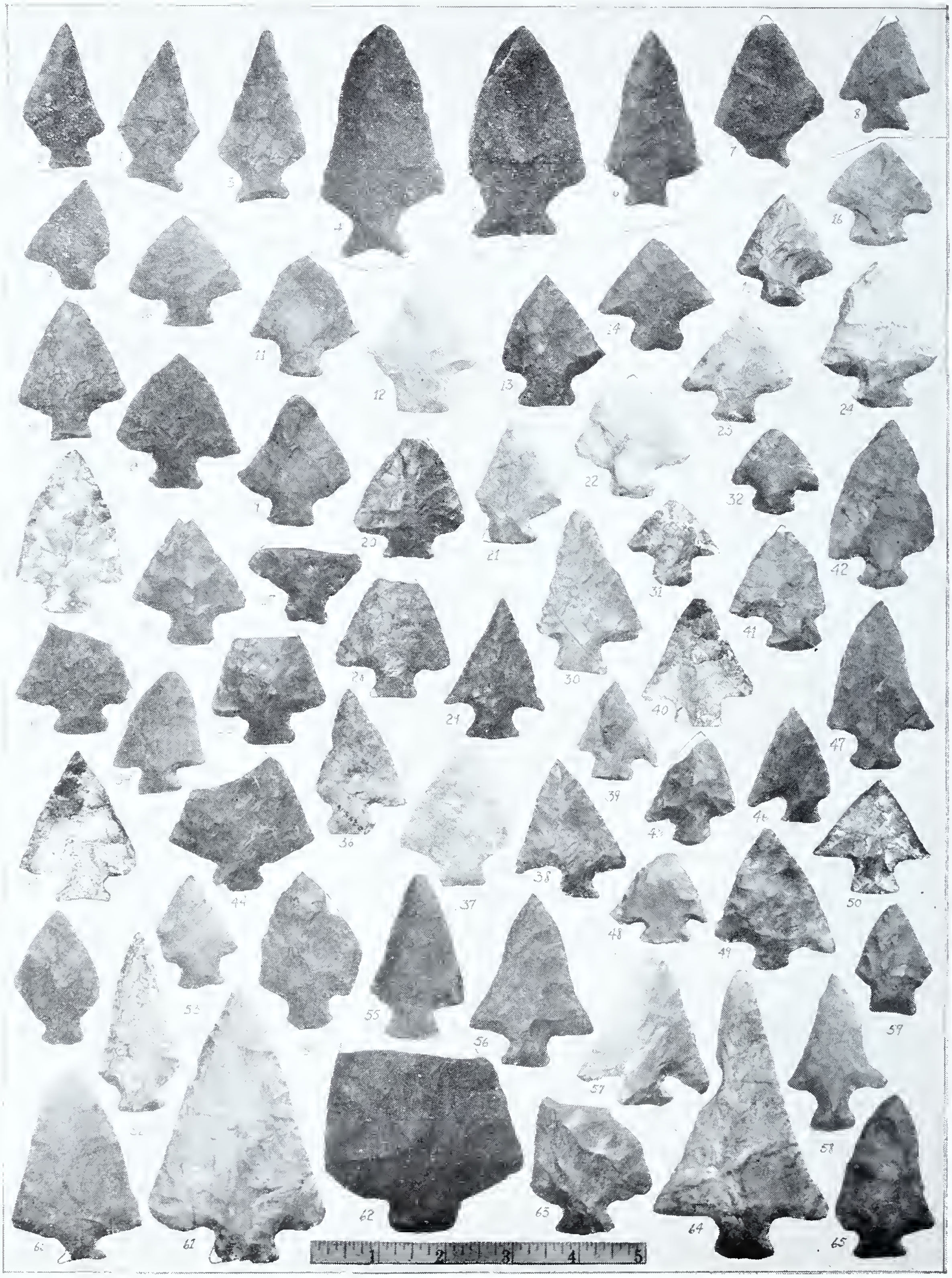

PLATE II. Susquehanna and Perkiomen broad spears of jasper.

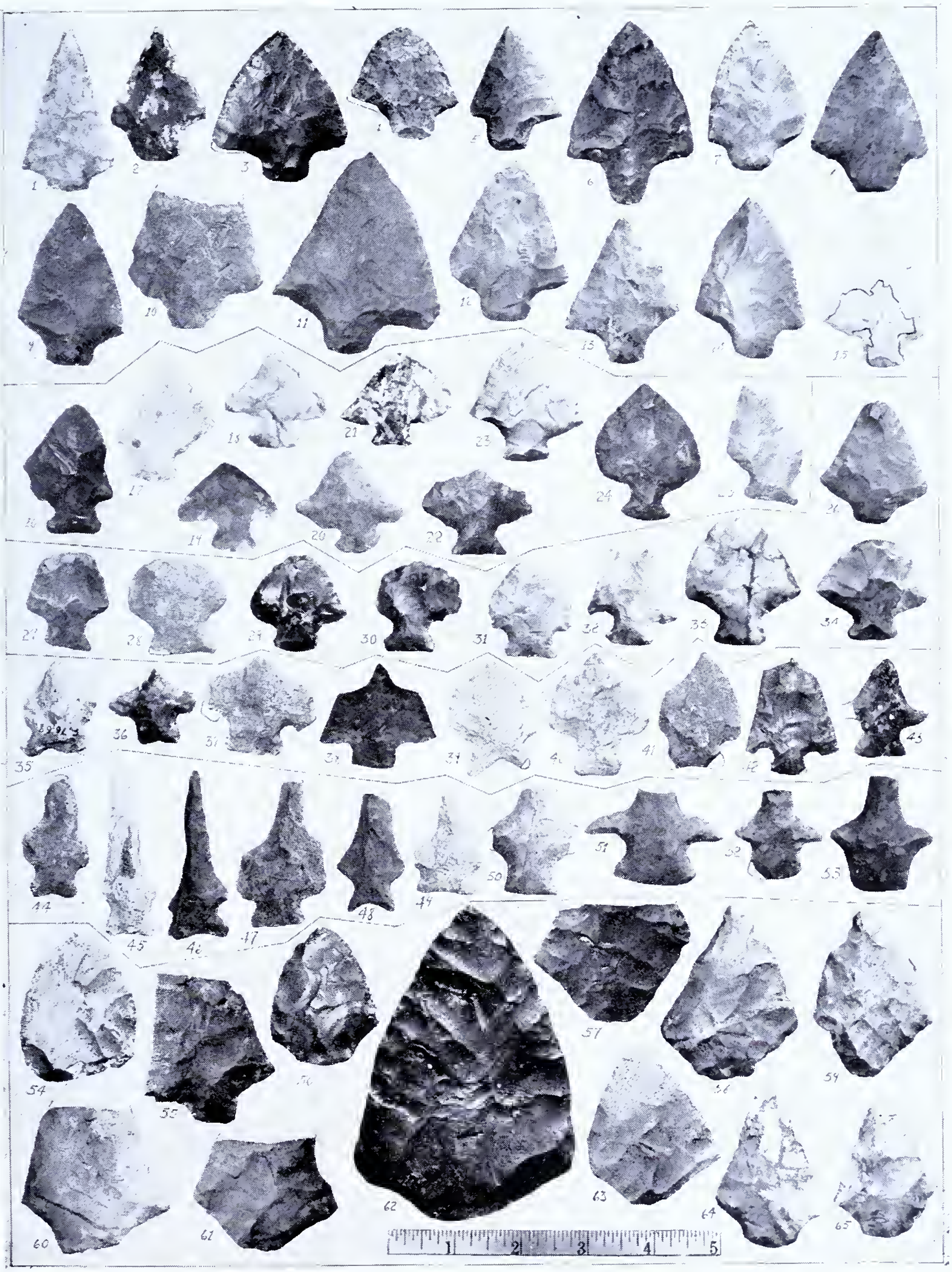

PLATE III. Lehigh broad spears and rechipped points, scrapers, gravers, drills, and blanks of the Transitional Period.